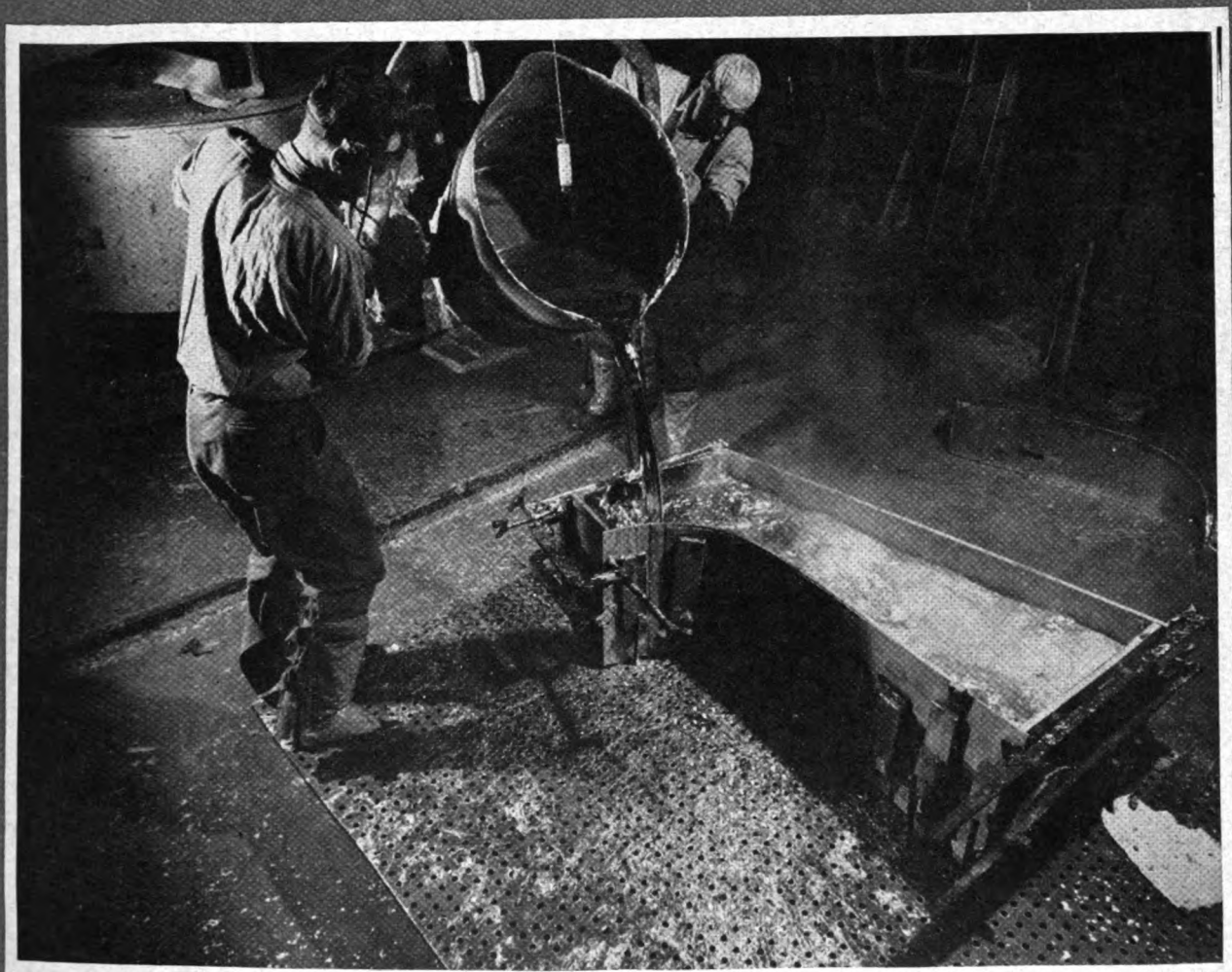


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# The Industrial Hygiene

newsletter



**HEALTH PROBLEMS IN LEAD INDUSTRIES—Page 3**      **JUNE 1950**

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## FEATURES

	Page
Health Problems of the Lead Industries.....	3
Industrial Hygienists Must Help Solve Air Pollution Problems.....	5
Steelworkers Attend Seminars on Plant Health.....	7
Health Programs in Industrial Plants Pay Dividends....	9
How to Modify Halogenated Hydrocarbon Apparatus...	12
Industries Advised to Plan for Protection of Workers...	13

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## Industrial Hygiene Units Set Up in Three More Cities

**P**ITTSBURGH, PA., Oakland, Calif. and Milwaukee, Wis., have recently expanded their health services to industry by establishing industrial hygiene units.

Lee Schreibeis heads the Industrial Hygiene Division of the Bureau of Sanitation, Pittsburgh Department of Health. Mr. Schreibeis and three other industrial hygienists are working present on a screening program in the major Pittsburgh industries. Close cooperation is maintained with the western district office of the Bureau of Industrial Hygiene, Pennsylvania Department of Health.

Robert Crothers, formerly with the Los Angeles City Industrial Hygiene Division and more recently with the Public Health Service, has been employed by the city of Oakland in the Department of Public Health, Division of Sanitation. The division is under the direction of Sidney F. Dommes, Jr., Public Health Engineer. Mr. Dommes holds an M. S. in Sanitary Engineering from Harvard and was with the Division of Industrial Hygiene, California State Department of Public Health. During the war he was in charge of industrial hygiene for the Ninth Service Command.

L. A. Penn, Public Health Engineer, was added to the staff of the Milwaukee Health Department when the Industrial Hygiene Section was formed recently.

## PAMPHLET STRESSES PARATHION SAFETY

A new pamphlet on the safeguards to take in handling parathion is being given away by the Monsanto Chemical Co. In view of the dangers from incorrect handling of this new insecticide the Division of Industrial Hygiene, PHS, is cooperating with the company to announce the availability of the pamphlet. Single copies or bulk shipments of it are available from the Monsanto Chemical Co., St. Louis 4, Mo.



## MEDICAL AND HEALTH PROBLEMS OF THE LEAD INDUSTRIES\*

By Andrew Fletcher, President,  
St. Joseph Lead Co.

SOME of you may wonder why I have been asked to talk for a few moments on the medical and health problems of our industry—because some of you probably believe that there are no such problems. Unfortunately, I know that there are, and we are only fooling ourselves when we assume that our industry is "perfect."

Satisfactory working and living conditions lead to good employee health, and good employee health will result in increased production. By good health, I mean a state of good physical and mental well-being, and not just the absence of disease and infirmity. Good health means less lost time, larger wage earnings, greater purchasing power for the communities in which our industries have operating plants, and greater profits for our stockholders. If we in our own plants have good employee health, we will encourage other plants and other industries to follow us, and the general health of our country will thereby be improved. Since most people are employed, if the employers provide satisfactory health programs, then private industry can go a long way toward solving the problem of adequate medical care for America's millions.

All of us know what improved safety in our working practices has meant in increased human happiness. Because we can readily compare compensation costs and compensation rates, we are able to figure the "dollar" savings that have resulted from safer working conditions. The safety dollar savings have not, however, been secured without effort and expense. For example, in 1923, St. Joe spent in the Lead Belt 10 cents per \$100 of wage and salary roll for safety department expense, and the cost of accidents was \$3.51. Last year we spent 58 cents, and the acci-

dent cost was only 75 cents. On a pay roll of 13 million the direct saving in compensation payments alone is very large, and we have also obtained equally satisfactory savings in the indirect charges which always result when a man is injured or away from his job.

I believe that if we are willing to spend money for improved medical service, the improvement in health will show even greater dollar savings for employees, stockholders and communities than was earned by the safety program. Good health will become "good business" in a very tangible way with the enactment of cash sickness laws. Effective July 1, 1950, employers in New York State will help pay for compensation for ordinary nonoccupational sickness and disability. Presumably employers will pay for sickness in proportion to their sickness experience, as in the case of accidents. Hence, a low sickness rate will mean lower operating costs.

If you will keep records on absences of one day or more, as I strongly urge that you do, you will find, as St. Joe already has, that more time is now being lost because of poor health than from accidents. In 1949, the Lead Belt percentage of absenteeism, which is based on expected shifts of work, was 2.57 percent, and is subdivided as follows:

	Percent
Industrial injury.....	0.31
Nonindustrial injury.....	.06
Unknown causes.....	.40
Illness.....	.68
Illness and death in family.....	.45
Miscellaneous and personal.....	.67

The actual "dollar" cost to the company for the 0.31 percent industrial injury absenteeism in 1949 was approximately \$100,000. We did not pay compensation for the illness absenteeism of 0.68 percent, but the cost to the employees can be estimated on the basis of accident compensation at around \$200,000, or slightly over \$60 per year Lead Belt employee.

Studies directed toward the early

\*Lead Industries Association Meeting—Chicago, Ill., April 13, 1950. (The speech is excerpted here.)

discovery and treatment of tuberculosis, cancer and heart disease, syphilis and the various chronic illnesses, are already producing results, and the increase in the life span of the people of the United States is definitely paying "dividends" to the economy of our Nation. But we must not be satisfied, because the opportunities for further improvement are enormous.

It makes no difference whether your company is large or small; health is the base of your productivity, and consequently, your earnings. A sick man cannot deliver a fair day's work, no matter how efficient is the machine which he is operating. All of us spend considerable time in seeing that efficient plants are designed, and approve the expenditure of large sums of money for the maintenance of machinery and buildings. There is no reason why we should do less for the man who handles the machine. Improvements in employee health will improve employee relations—and there is no bigger problem for management today than the bettering of industrial human relations. An employee, who knows that you are interested in maintaining his health and earning capacity, will feel more secure in his job.

How can we improve employee health? I offer the following:

(1) Have the "boss" definitely become interested in health, and make comparative reports to him in which the reasons are given for each absence of one day or more.

(2) Have a survey made of your operations for occupational disease hazards. It is often advisable to have it done by a recognized outside organization, such as the Industrial Hygiene Foundation in Pittsburgh, the U. S. Public Health Service, or the Industrial Hygiene Bureaus of such States as have developed a suitable organization. The Industrial Hygiene Foundation can, of course, make competent medical surveys, show a company what its health needs are, and how to meet them.

(3) Make someone responsible for correcting unfavorable health conditions, either inside or outside the plant. For over 1,000 employees it probably is worth while to employ a full-time doctor; if you only have a few hundred, you can combine with your neighbor for a suitable program.

**COVER PICTURE**—Pouring a lead die, workmen are well protected from splashes of hot lead by face shield, goggles, and leather puttees. Down draft ventilation carries off the lead fumes.

## West Virginia Uses Mobile Laboratory For Air Pollution Control Studies

**A** MODERN laboratory on wheels is now in use in West Virginia cities to facilitate the collection and analysis of air samples in the study of air pollution control. Designed and equipped by the Bureau of Industrial Hygiene of the State Department of Health, the truck will make it possible to obtain air-borne samples of materials which were unobtainable when the conventional settling cans were used. This was the procedure used in the previous survey of the Charleston area. The mobile unit will also make it possible to get samples in hitherto inaccessible places since no permanent location is required.

The truck is equipped with a gasoline-driven electric generator which will supply the necessary power to operate the various instruments and collecting devices for entrapping gases, fumes and dusts in the air. The instruments installed include the impinger, gas and fume absorption trains, toxic gas ana-



Dr. N. H. Dyer, Director, West Virginia, Department of Health, and Paul D. Halley, Associate Director, Bureau of Industrial Hygiene, in front of the mobile laboratory, and John G. Psathas, Jr., industrial hygienist, at work in the laboratory. Photos by Frank Wilken, *Charleston Gazette*.

lyzer, carbon monoxide indicator, orsat gas analysis equipment, vacuum type paper filter collector, and electrostatic precipitator. The truck is also equipped with a small laboratory table-sink, fluorescent lights and power outlets so reagents can be prepared for sampling and laboratory analyses can be performed on the spot.

Paul D. Halley, director of the bureau, has made plans to reestablish in the Kanawha Valley and in the Charleston area the soot fall and dirt fall stations that were used in the 1945-47 study. Mr. Halley expects the mobile unit to greatly strengthen the bureau's efforts to continue this study of air pollution and its control.



## OZONE GENERATORS IN GARAGES ADD ANOTHER HAZARD

**N**OT only have ozone generators in garages no practical effect on reducing carbon monoxide concentrations, but a recent investigation of 19 garages in Pennsylvania indicates that the use of ozone generators introduces another toxic gas into the garage air in concentrations potentially harmful.

The Bureau of Industrial Hygiene of the Pennsylvania Department of Health made an investigation of ozone genera-

tor installations in garages of a 12-county area in the State and reached this conclusion.

Nineteen garages where 27 ozone generators were installed were investigated. Employees of the garages were interviewed in each case and many of the mechanics exposed to ozone complained of headache, nervousness, and nausea. Others stated that they had undue irritation of the nose and throat when the ozone generators were in use and these symptoms were experienced in a somewhat greater degree by the investigators.

The amount of ozone which may be

## Bibliography on Air Pollution Compiled by PHS

**A** BIBLIOGRAPHY on the biological aspects of air pollution has been compiled by the Public Health Service and printed as a public service by the United Steelworkers of America, CIO. The work was done under the direction of Dr. Harry Heimann of the Division of Industrial Hygiene, PHS. More than 300 references are listed.

Nation-wide concern about the health effects of air pollution has given rise to many requests for literature references on this question. A thorough study was made by Dr. Heimann's group of all possible sources, in this country and other countries, for information on the biological aspects that might contribute to the research studies in progress.

Several thousand copies of the bibliography will be distributed by the Division of Industrial Hygiene, PHS. Additional copies may be obtained by writing to the Department of Publicity, United Steelworkers of America, 1500 Commonwealth Building, Pittsburgh 22, Pa., and sending 50 cents per copy to cover costs of mailing and handling.

safely inhaled over an 8-hour daily work period is generally accepted by authorities to be one part per million parts of air. It was found that concentrations of ozone in excess of this amount were present in 15 of the 19 garages investigated. Samples were taken with an absorption train arranged to pass the air through scrubbers consisting of potassium dichromate and potassium permanganate solutions by means of fritted-glass bubblers, the ozone being collected in a buffered standardized potassium iodide solution. Ozone was determined by titration with standard sodium thiosulfate solution, using starch as an indicator. Samples were collected at rates varying from  $\frac{1}{2}$  to 1 liter of air per minute and volumes of air per sample were from 50 to 100 liters. A total of 83 samples were collected and analyzed for ozone with 46 of these being in excess of, and eight slightly under, the safe limit mentioned above.—H. L. Williams, E. F. Hoover, and I. B. Williams, Pennsylvania Department of Health.

## "Industrial Hygienists Must Help Solve Air Pollution Problems"—Bloomfield

**A**T OUR last meeting, in the course of my remarks on the status of the industrial hygiene program in this country, I pointed out that the Donora smog episode and other recent events had jet-propelled the industrial hygienist into the field of air pollution. The tenor of public thinking in the past 12 months, I believe, has more than justified this predication.

Public recognition of the health aspects of air pollution has been intensified in legislative stirrings. Impelled by the Donora proof that air pollution does have health implications, more than 30 States and cities in the last year have requested the Public Health Service for assistance in evaluating and controlling local air pollution problems.

The numerous symposia, too, which have been held by various scientific organizations, give credence to the fact that air pollution is not a problem of the hour—to be spotlighted by a tragedy and then relegated to obscurity again. It is a problem with distinct health implications, and, as such, I repeat, it is our problem.

The air pollution question is presently caught in a pincers movement of agitation that might result either in the proper solution of the problem or in one of two unpleasant consequences. One of them is that the situation might explode in the passage of unwise and drastic legislation which would set the air pollution program back rather than advance it. The other undesirable possibility is that, in the face of the admitted complexity of the problem, efforts to cope with it may rise no higher than the current din and clamor.

In such a state of impasse, we may well give way to inactivity and slumber on with the air pollution problem, just as we did with stream pollution, until something more drastic hits us in the face. Which of these three possibilities materializes depends largely on our approach to the situation, which, in turn will be determined by our interest and zeal.

This is how the situation shapes up at present. The two claws of the pincers that I mentioned are an intensified

**A speech presented by J. J. Bloomfield, assistant chief of the Division of Industrial Hygiene, PHS, before the twelfth annual meeting of the American Conference of Governmental Industrial Hygienists, April 25, 1950.**

public concern with the nuisance aspect of air pollution and the consideration of its health implications—which is by far the more powerful. The first may be an evidence of socioeconomic change—a demand for improvement in our way of life.

For years people have just put up with the inconveniences as well as the other effects of air pollution—physiological, psychological, economic, and esthetic. In the gradual process of improving their standard of living, they have now reached the stage where they demand some relief from atmospheric pollution. Even though they may have to live under the shadow of the factory stacks, they still want the privilege of having their children grow up in a better atmosphere. Those people want some type of pollution control. At the same time, the control cannot be so rigid as to impair the operation of the local industry, on which many depend for their livelihood.

The more potent factor, however, in this fight against air pollution is the health consideration. We know now that air pollution can cause severe acute disabling disease. But the people who breathe contaminated air year in and year out are showing increasing concern over the possible long-range effects on their health. This interest and anxiety are slowly snowballing, and we had better be ready with the answers before they catch up with us. The questions that must be answered before we can proceed toward an intelligent solution of the problem have already been posed by the Donora investigation, as well as other studies.

### Biological Data in Donora Study

Let me review for you the salient points in the biological data that we accumulated in the Donora study. Dur-

ing our investigation, we found that 13 percent of the population were affected, ranging from slight to extreme severe, with 20 fatalities. The affection was essentially an irritation of the respiratory tract and other exposed mucous membranes. Particularly noteworthy was the direct relationship of both incidence and severity to increasing age. This observation has much meaning for us because of our increasing interest in geriatrics and our concern with any influences to which the elderly may be susceptible. We were also searching for indications of preexisting ailments, so we considered it highly significant that the fatalities had previous cardio-respiratory diseases.

As opposed to these acute effects, our primary concern must now be with the long-range effects on health. Now that we know some of the effects of acute exposures to concentrated contaminants under unusual meteorologic conditions, we must learn how the people's health is affected by continuous exposure to the usual concentrations under normal weather conditions, year in and year out.

In addition to determining the chronic effects on healthy people, we must make a special study of the influence of air pollution on cardiacs, asthmatics, and people with other respiratory diseases. As yet, it is unknown whether air pollution only aggravates, or also causes the onset of, respiratory diseases. Also, to what extent does damage to the respiratory system affect the cardiovascular system?

We must also ascertain the possible special effects of air pollution on children and on the elderly. Does the cutting down of sunlight lessen a child's resistance to disease? Does air pollution shorten the life of the aged? These answers cannot be obtained in a year or two. There must be extensive research, both biological and toxicological. Definitive controls cannot be prescribed until the missing data have been brought forth through lengthy studies.

In the meantime, however, how can we effectively harness present scientific

interest, to which the many air pollution symposia attest, in order to benefit from an orderly, economical use of available skills and resources? How can we utilize the public pressure, which is reflected, among other ways, in the introduction of legislative bills?

### Air Pollution Conferences

Let us briefly consider some of the special meetings or sessions devoted to this problem in the past year. Among the groups that manifested special interest in air pollution by holding conferences were the Division of Industrial and Engineering Chemistry of the American Chemical Society, the Manufacturing Chemists' Association, the Smoke Prevention Association of America, the Industrial Hygiene Foundation, the American Meteorological Society, and the Chemical Section of the National Safety Congress.

Some of these conferences covered the broad phases of the air-pollution problem, while others considered in detail the technical engineering control methods and, to a lesser extent, the health implications. A heterogeneous assembly of persons interested in air pollution also participated last year in the First National Air-Pollution Symposium at Pasadena, Calif., while last February the School of Public Health of the University of Michigan, held an inservice training course on air pollution, which, I believe, was the first course of its type.

All these conferences are indicative of the intense interest on the part of top management, technical societies, and some health departments in the field of air pollution. However, different points of emphasis in the discussions of these individual groups reveal that there has not been an adequate exchange of information between the societies themselves to resolve some understandable differences of opinion.

A thorough explanation and clarification of the problem is very much indicated, and an opportunity for such closer alignment of thought will be found at the United States Technical Conference on Air Pollution, which is being held in Washington, D. C., next week at the request of the President. This promises to be the most comprehensive conference on this subject to

date, and I hope that one of the outcomes will be a closer understanding and appreciation of the total problem. The various technical organizations can make an outstanding contribution to the multifaceted research program of air pollution, and the achievement of proper perspective should enable them to work more effectively.

### Technical Improvements

Technical interest in air pollution in the past year has also expressed itself in the considerable work that has been done on improving instrumentation and analytical methods. Methods of collection and analysis developed by the Stanford Research Institute are described in the "Second Interim Report on the Smog Problem in Los Angeles County."

The Atomic Energy Commission, too, has been developing new methods of sampling procedures and analysis. Among the instruments now being adapted in the evaluation of air pollution are the electron microscope, the cascade impactor, the penetrometer, the Zsigmondy ultramicroscope, and the mass spectrophotometer, as well as the standard industrial hygiene collection and analytical equipment. Many investigators are also using liquid air or nitrogen freeze-out traps in the collection of air contaminants. In the Public Health Service work is now in progress on the development of new methods of collection and analysis of sulfur dioxide and nitrous oxide.

### Legislation Varies

Although the need for better coordination of scientific information is important, as I previously mentioned, it is equally vital to achieve better public understanding of the complexities and ramifications of air pollution. Failure to grasp the problem in its entirety is revealed in the character of legislation that has been proposed in some States. I refer to specific air pollution laws, in contrast to the general nuisance legislation under which air pollution is covered insofar as it constitutes a nuisance—as, for instance, the causation of odors.

Today, as you know, nuisance legislation is found in all 48 States and the District of Columbia. Many of these

laws are local in nature, as each State has delegated authority to the county, municipality, or health board to regulate, prevent, and remove public nuisances. However, several States have also proposed special legislation dealing with the specific problem of air pollution, and these measures vary widely in scope and severity.

South Carolina, for example, has authorized the creation of a committee to make a full and complete study of the needs and means for regulating and controlling smoke, soot, smog, and other similar public nuisances in the State and to report back to the legislature on the results of the study, together with recommendations, within a specified period of time. Another research promotion type of bill was recently introduced in California. Last month the Governor of Maryland signed into law a bill providing that a sum not to exceed \$100,000 be appropriated annually for the State Health Department for the study and control of air pollution in the State.

Such measures are to be commended, for they feel their way along, first requiring study of a particular situation before controls are imposed. On the other hand, though, some States are promoting full-scale air pollution prevention and abatement programs, some of which may be too rigorous. The bill proposed in New Jersey, for example, has so many restrictive provisions that industry has felt impelled to fight it.

One of the most stringent bills before a legislature was introduced in Massachusetts. It would require all commercial plants in that State, especially those concerned with commercial fertilizers, to eliminate odors detectable by the average individual beyond a radius of 300 feet. Kentucky is using a zoning approach to the problem. In that State a bill has been introduced to prohibit the establishment, development, or operation of carbide, sulfuric, and lime plants within 10 miles of a city of the first class.

It is therefore obvious that a wide variety of air pollution bills have been introduced in a number of State legislatures in the past year. The industrial hygienist can render an invaluable public service by presenting all the necessary facts to his legislative body

(Continued on page 15)

# Safety Committeemen of Steelworkers' Union Attend Experimental Seminars on Plant Health

**A**N experimental series of informal seminars on industrial hygiene and general health designed especially for plant safety committeemen by the Division of Industrial Hygiene, PHS, the Pennsylvania State Health Department, Bureau of Industrial Hygiene, and the United Steelworkers of America, CIO, was recently completed with success in the Pittsburgh area.

There was general agreement among the sponsors of the series after its completion that the courses might well furnish the basis for courses in other areas and other industries.

One of the most important results of the seminars was the realization by the sponsors that, through the use of printed material, moving picture films, and care by the speakers in throwing out questions to the audience for discussion, the various aspects of industrial hygiene principles were made sufficiently nontechnical for understanding by plant workers.

The seminars were developed after Frank Burke, safety and health director of the Steelworkers' Union, approached the Division of Industrial Hygiene, PHS, in Washington, and asked that some kind of training experiment be worked out for the safety committeemen of his union locals to assist them in realizing the importance of the hazards to health in their plants.

The idea was not to try to make them industrial hygiene experts, Mr. Burke pointed out, but to give them a general understanding of what good industrial hygiene practices involve, and

to instill in them the realization that hazards to health were as important as accident hazards.

Mr. Burke said the union was anxious to provide such courses for its members in many other areas of the country if an experimental series proved that such a project was feasible. The Pittsburgh area was chosen for the first series because there is a heavy concentration of steel plants there and the union's headquarters there would be able to give direct assistance.

The various subjects to be covered were organized into seven seminars, each seminar presented in three towns around Pittsburgh on Monday, Tuesday, and Wednesday nights of succeeding weeks. The same speaker ran each seminar, leading the discussion in Greensburg, Pa., on Monday night, in Blawnox, Pa., on Tuesday night, and in Vandergrift, Pa., on Wednesday night.

The first seminar, titled "Environment and Health," was led by Joseph E. Flanagan, Jr., chief of the Cooperative Health Services Branch of the Division of Industrial Hygiene, PHS. Successive weeks dealt with the subjects of dusts in industry, the hazards of solvents, medical and engineering control methods, atmospheric pollution, and general public health, and were led by Dr. Joseph Shilen, director of the Pennsylvania Bureau of Industrial Hygiene, and technical members of his staff.

The final seminar was titled "A Local Union Program." It was consolidated into a single meeting at the William Penn Hotel in Pittsburgh and

was led by J. J. Bloomfield, assistant chief of the Division of Industrial Hygiene, PHS.

Each seminar lasted 2 hours, divided by a moving picture at the halfway mark. Despite the shortage of good films dealing with the specific industrial hygiene subjects, it was possible to find enough to come close to the general subject for the evening. Some of the films borrowed for the seminars were *The Air We Breathe*, available from the Mine Safety Appliance Co.; *Clean Waters*, dealing with stream pollution; *The Doctor in Industry*, made by General Motors, and portraying the work of an industrial physician; *So Much for So Little*, a new Public Health Service color film explaining the importance of a local public health department, and a new film on tuberculosis rehabilitation.

The interest of the safety committeemen was surprising and encouraging to the seminar leaders. At all three of the meetings during the first week's seminar the committeemen expressed opinions that many of their foremen and perhaps even higher management men ought to be attending the seminars as well as they.

Literature distributed at the seminars included the Worker's Health Series pamphlets, the booklet *Outline of an Industrial Hygiene Program*, another booklet titled *At Your Service* and several others. It was apparent that if such seminars continue, the writing of a booklet or pamphlet designed for this special audience might be considered.

## Georgia Tech Offers Summer Course in Industrial Hygiene

For the third consecutive summer, Georgia Institute of Technology will offer a 12-week course in industrial hygiene. The need for personnel trained to practice industrial hygiene continues, and, to assist in alleviating the need, Georgia Tech in cooperation with the Public Health Service and the

Georgia Department of Public Health has been offering an intensive one-quarter course at graduate level during the summer.

Most of the students who have attended in the past were engineers on stipends from State boards of health. The material is designed to provide a comprehensive background for men with collateral scientific or engineering training who are interested in industrial hygiene.

A total of 14 hours of lecture and 9 hours of laboratory per week results in a total of 17 quarter hours of academic credit. Field training accounts for the remaining time. A study of actual field problems will be made under the supervision of the Georgia Division of Industrial Hygiene and the Fulton County Health Department.

Inquiries may be addressed to the Dean, Graduate Division, Georgia Institute of Technology, Atlanta, Ga.



## FLORIDA

**Personnel.**—W. E. MacDonald, Jr., industrial hygiene chemist of the Division of Industrial Hygiene, Florida State Board of Health, is taking a post-graduate course in the University of Florida, leading to the degree of master of science.

**Pollen Study.**—The Division of Industrial Hygiene has undertaken a pollen study of the State which will be carried on for at least 12 months. Already 18 pollen traps have been installed and are in operation in strategic locations. It is expected that at least two more traps will be added later. The project presents considerable difficulty because of the wide variation in flora throughout the State and also because of the long flowering season.

## DETROIT, MICH.

**Small Plants.**—A workable plan has been evolved and activated for improving emergency medical care or first aid facilities in small work places. Such establishments are now required to provide an adequate first-aid kit and to post a card showing prearranged facilities for ambulance service, hospital admittance, physician's service and reporting of injuries. A cooperative program was undertaken with the Detroit Chapter of the American Red Cross, the Detroit Safety Council, and the Michigan Department of Labor which has resulted in the establishment of courses of instruction in industrial first aid and the development of a policy which will eventually require all small work places to have in their employ two workers with specified first aid training. This program will require the instruction in first aid of several thousand workers.

**Atmospheric Pollution.**—A cooperative program has been inaugurated

with the Division of Smoke Abatement and Inspection of the Department of Buildings and Safety Engineering whereby this bureau now is responsible for the analytical evaluation of the nature and severity of atmospheric pollution, the nature and quantity of atmospheric discharges from stacks, vents and other sources and the effectiveness of devices for the control of atmospheric pollution. Three workers and certain special equipment have been or will be made available for this purpose.

## LOUISIANA

**Review of 1949.**—The use of anhydrous ammonia as a fertilizer has caused considerable concern among Louisiana citizens and resulted in the enactment of the *Anhydrous Ammonia Fertilizer and Equipment Act*, according to the 1949 annual report of the State industrial hygienists. This act created the anhydrous Ammonia Commission of Louisiana to promulgate rules and regulations setting forth standards that equipment for storage and dispensing anhydrous ammonia must meet.

Numerous dust studies were made during the year including several in cotton gins and rice driers, in response to requests from local health units and citizens. Dust from rice driers had formerly been a prolific source of complaints, but previous studies and recommendations have eliminated most of the nuisances and greatly improved the environment of the workers. This was done by enclosing the various operations and bins, and using dust control on the air outlets.

New complaints originate from new driers or when additions are made to the older ones. Dust from cotton gins is more difficult to control, but some control measures have given promising results. About 50 gins were visited to study conditions and control measures.

Twenty-six lectures on industrial hygiene were given during the past year by the State industrial hygienists. Most of these were 1-hour lectures, but a few were 2 and 3 hours each. They were given to the following groups: Sanitarians and nurses at the State-City Training Center, senior dental class at Loyola University, senior engineers at Tulane University, and students at Tulane School of Medicine. The last group included junior medical students, who heard 8 lectures, and candidates for the M. P. H. degree who attended 12 lectures.

## MASSACHUSETTS

**Shoe-Fitting Machines.**—A public hearing was held in Worcester March 16 to discuss the potential dangers from the use of X-ray fluoroscopic shoe-fitting machines. Representatives of the Worcester County Medical Society, shoe-fitting machine manufacturers, shoe-store operators, and city and state health officers attended. It was decided to postpone any action to prohibit or restrict the use of these devices until after the X-ray shoe-fitting code is adopted by the ACGIH at its annual meeting.

**Speech.**—John B. Skinner, director of the division, has been invited to speak on New Industrial Diseases at the annual meeting of the Massachusetts Medical Society.

**Personal.**—George W. Boylen has accepted a position as chemist on the staff of the Division of Occupational Hygiene. Mr. Boylen is a recent graduate of the University of Massachusetts.

## WISCONSIN

**Milwaukee.**—LaVerne A. Penn, who heads the newly formed Industrial Hygiene Section of the City Health Department, has inaugurated an inservice training program for all sanitary inspectors. The system of sanitary inspection of factories has been in effect in Milwaukee for many years, and Mr. Penn hopes that in the routine factory inspections the men will also learn to recognize many of the more common industrial hazards which might involve toxic atmospheric exposures. These will be reported to the Industrial Hygiene Section for evaluation.



# Health Programs in Industrial Plants Pay Dividends to Owners and Workers\*

**By Crit Pharris, M. D.  
Asst. Medical Director  
United Aircraft Corp.**

**Y**OU'RE in business to make money—not for your health. Yet the health of the workers in your plant has a definite effect on the amount of money you make. With an organized health and safety program, you ought to be able to save over 20 percent of the money that injuries and illnesses now cost you. For an average plant of 150 employees, that amounts to a saving of over \$7,000 per year. So it makes sense to spend money for such a program.

These figures have to do with monetary costs. Other economic benefits are just as certain but not as simple to reduce to dollars and cents. In actual dollars, an average plant of 150 will spend \$22,000 per year on nonindustrial illnesses and \$8,700 on industrial injury and illness—altogether a total of over \$30,000 per year. Such a plant will save over \$10,000 with a health and safety program which will cost \$3,000, making a net savings of over \$7,000 or over 23 percent. You may not spend any such amount. You may, however, spend considerably more. These figures are compiled from State and national averages.

According to the Connecticut State Department of Labor in the April 1948 issue of its monthly bulletin (1), the cost to employers of work injuries in Connecticut during 1947 totaled \$45,130,782. Department of Labor figures for industrial employment averaged about 771,000 during 1947 (2). From these two figures, we can get a cost of \$58.53 per employed person per year for job-connected injuries. If all plants shared equally in this cost, a plant of 150 could expect to contribute  $150 \times \$58.53$  or \$8,779.50 annually.

That figure does not include economic losses suffered by the worker but solely those by the employer.

As for nonoccupational illnesses and injuries, we can use the national average according to an article published in January 1948 by the Council on Industrial Health of the American Medical Association (3). They reported an average of 1.25 days per employee per year of illness.

ment of Labor's bulletins for the first 4 months of this year (4) showed the average hourly earnings for production workers in the State to be about \$1.38. With that average wage rate, our hypothetical 150 employees would lose \$14,904 a year. It has been estimated that the company usually loses one and one-half times the wages lost by employees (5). This means that a company of 150 will lose about \$22,356 per year from nonindustrial illnesses.

So, if we add the \$8,779.50 work injuries cost to the \$22,356 sick absenteeism cost, we come out at \$31,135.50 as the cost to the employer of a plant of 150 from illnesses or injuries among his employees.

How can a health and safety program affect these costs? First of all, a National Association of Manufacturers' survey (6) calculated that such a program reduces occupational injuries by 47 percent. I think not only that this percentage gives a fair picture of the possible reductions, but also that, if the health and safety program is permitted to keep pace with increasing knowledge of preventive techniques, comparable reductions in cost can be obtained in succeeding years.

For example, in one division of the United Aircraft Corp. we had a good medical department which concentrated, however, until 1943, chiefly on the care of injuries and illnesses. Beginning in that year, a safety department was organized, an industrial hygiene service was instituted, a modern placement program was initiated, and emphasis was shifted increasingly to the preventive aspects of all health and safety work.

During the next 5 years (1943-48), the lost time frequency rate decreased an average of 27 percent a year. This produced a total decrease from the 1943 rate to the 1948 rate of about 80 percent, and although in each year the percentage drop varied, it is interesting to note

that the 1948 rate was 41 percent below that for 1947. In the same period, 1947 to 1948, the severity rate dropped 45 percent. That was in the fifth year after 4 years of annual improvement. During the 5-year period, the compensation insurance rate was also successively reduced until, in 1948, it was 75 percent lower than in 1943. Our own figures in that division, therefore, seem to indicate that actual cash benefits go on steadily and that the National Association of Manufacturers' survey figures are not at all extravagant.

If we take their percentage and multiply it by the estimated costs, we get  $\$8,779.50 \times 47$  percent or \$4,126.37 annual saving in the cost of industrial disabilities to a plant of 150 by the institution of a health and safety program.

The same survey showed that the institution of a health and safety program produced an annual reduction of 28 percent in the number of days lost because of nonindustrial illnesses and injuries. If we apply that to the costs we calculated, we get  $\$14,904 \times 28$  percent or \$4,173.12 saved in wages to employees and  $\$22,356 \times 28$  percent or a total savings to a plant of 150 for nonindustrial illnesses of \$6,259.68.

So far then, we have a savings of \$4,126.37 for industrial injuries and \$6,259.68 for nonindustrial illnesses or a total of \$10,386.05 saved in 1 year for an employer of 150 by instituting a health and safety program, disregarding the savings to employees.

Now let us bring in the cost of such a program and then examine our ledger sheet. Dr. C. O. Sappington in his book, *Essentials of Industrial Health*, published in 1943 (7) played with these National Association of Manufacturers' figures in much the same way I have. He used an average cost per employee per year for medical hygiene and safety services of \$13.46. The figures in the different divisions of my corporation run from a low of \$15 to a high of \$20 per employee per year at the present time for all health and safety services, including the handling of both compensation and group insurance claims. To

\*Presented at 134th annual meeting of the Manufacturers Association of Connecticut, Inc., New Haven, Conn.

keep my estimates entirely on the conservative side, let us use \$20 per employee per year and include all health and safety services. That would mean an outlay of \$3,000 for our 150-man plant.

If the costs amount to \$31,135.50 without a program and the savings because of a program amount to \$10,386.05 per year, we shall have to subtract from these savings the cost of the program or \$3,000. Doing this, we show a net profit to a company of 150 in a year of \$7,386.05, about 23.7 percent of the cost of \$31,135.50. Furthermore, we can confidently predict further savings as the service is applied through successive years.

These are definite benefits to which dollars and cents values may be easily assigned. There are many other returns for which definite financial equivalents cannot be assigned so easily, such as (8):

1. It helps stabilize the labor force. (The N. A. M. survey showed a 27 percent average reduction in labor turnover.)

2. It enables the worker to produce more by properly fitting the worker to the job and by improving health standards.

3. It prevents litigation.

4. It contributes to a sense of security among employees and promotes a feeling of good will toward the management.

These so-called intangible benefits, in the opinion of many, are more important than the financial returns on which I spent so much time in the beginning of my talk. Especially is this true of the last benefit I mentioned, that is, contributing to improved employee-management relationships. The interests of the employer and the employee are nearly identical under an arrangement which tends to reduce loss of working time because of sickness or injury (9).

While I acknowledge Dr. C. O. Sappington as my chief guide in developing the dollar and cents figures and Dr. C. D. Selby for the listing of the intangible benefits, let me in conclusion quote from an address given in 1947 by William P. Given, president of the American Brake Shoe Co. (10). Mr. Given said in part:

"We need not only better working conditions but the best possible working conditions. As far as is humanly and mechanically possible, our job is to give each man conditions we should like were

we working in his place. This is not only a human obligation; it is the only way we can gather into our working forces decent, competent young men—the only way we can successfully compete for them with other industries. Fundamentals are such today that competition as to wage rates has been largely eliminated. But there is still a basis of keen competition—'a better place to work.' If you 'rate' the best people in the trades you need, gradually you will get them. As you do, costs will be affected and profits improved.

"Actually, the executive who isn't deeply interested in eliminating all hazards does not qualify otherwise in this period when human relations are at last getting the recognition due them. With today's competition for the most intelligent and efficient workers, stockholders cannot long afford directors who do not realize the importance of top health and safety conditions in their company's plants, nor managements which do not spend whatever money is necessary to give plant people the maximum of health and safety assurance."

#### References

(1) State of Connecticut Department of Labor, *Monthly Bulletin*, Vol. 13, No. 4, April 1948. P. 12.

(2) State of Connecticut Department of Labor, *Monthly Bulletin*, Vol. 12.

(3) *Plantation Health*, 12: 16-20, January 1948, "Industrial Health—Progress and Prospects," by Carl M. Peterson, M. D., secretary, Council on Industrial Health, American Medical Association.

(4) State of Connecticut Department of Labor, *Monthly Bulletin*, Vol. 14, Nos. 2-5.

(5) Brundage, D. K., *Public Health Reports*, August 21, 1936.

(6) Survey made in 1940 by the National Association of Manufacturers; published in 1941.

(7) *Essentials of Industrial Health*, by C. O. Sappington, M. D., Dr. P. H. Pp. 67-68.

(8) Quoted in part and with some changes in wording from "Studies of the Medical and Surgical Care of Industrial Workers" by C. D. Selby, M. D., *Public Health Bulletin*, No. 99, USPHS, 1919.

(9) "Development of a Program of Health Service in Industry," by Harold

R. Hennessy, M. D., *Minnesota Medicine*, 29: 1012-1016, October 1946.

(10) Transactions of Twelfth Annual Meeting of Industrial Hygiene Foundation held at Mellon Institute, Pittsburgh, Pa., November 20, 1947.

## MEDICAL CARE PLANS VARY WIDELY WITH KINDS OF INDUSTRIES

THE wide variations in the medical care plans developing recently under collective bargaining are well-illustrated by the following examples.

### Hotel and Restaurant Employees

The hotel and restaurant industry of Duluth has established a health and welfare fund supported by contributions from the employers. Full-time workers are eligible for the following medical benefits: (a) Hospitalization and surgical insurance up to \$500 per case, and (b) medical care at the Arrowhead Cooperative Health Center which provides almost complete physician's care or, if the union member prefers, limited reimbursement for medical care from any licensed doctor of medicine of his own choosing.

This kind of security is unusual in an industry in which there are great seasonal variations in employment, a considerable number of part-time workers and a relatively high rate of turnover as workers shift from one employer to another. The program is designed to meet most of these difficulties. It provides for the part-time worker by fixing various levels of benefits based on the hours worked. It provides for the seasonal employee by permitting union members to continue protection by paying directly into the welfare fund during off seasons. It continues the protection of workers changing jobs within the industry under a contract which involves all employers in the industry.

Mr. A. B. Siegrist, manager of Duluth's Spaulding Hotel and chairman of the board of trustees of the fund commented:

"We expect the welfare fund to work for the benefit of the employers as well as the employees. First, it is worth a good deal to us to be able to point out to the public that regular provision is now made to guard the health of those

who serve them food. Second, experience elsewhere leads us to expect an increase in efficiency as a result of the provisions now made for the health of our employees. Third, we confidently hope that, as the employees come to realize the full value of the fund, there will be a considerable improvement in the rate of turnover."

The trustees representing the Hotel and Restaurant Employees Union of Duluth (AFL) were equally enthusiastic about the new program.

### Steel Workers

To implement one phase of the recent national steel settlement, 120,000 workers of the Bethlehem Steel Co. and their 300,000 dependents have been enrolled on a Nation-wide basis by the Hospital Service Plan of Lehigh Valley, Pa., a Blue Cross organization. Under the uniform rate structure, the insured are eligible for 70 days of hospitalization per illness in semiprivate accommodations. The annual premium under the 5-year contract amounts to more than \$4,000,000 a year. The employees and the employer each contributes 2½ cents an hour into the health and welfare fund (this is exclusive of pensions).

Management, labor unions and local health personnel participated in the negotiations. According to E. A. Van Steenwyk, executive director of the Associated Hospital Service of Philadelphia and a pioneer of the Blue Cross movement, the decision to use the Blue Cross was made by Bethlehem Steel largely because it wished to be identified with local health forces. Similar plans are being worked out by the Hospital Service Association of Pittsburgh and several other associated plans to serve the 200,000 employees of the United States Steel Corp. and their 500,000 dependents.

### Stevedores and Ship Clerks

Fourteen thousand stevedores and ship clerks on the west coast are beginning to collect hospital, medical, and surgical benefits under a welfare plan jointly supported and administered by the shipowners and the union. It was negotiated as a supplement to the regular coastwise agreement between the International Longshoremen's Warehousemen's Union (CIO) and the Pacific Maritime Association.

The benefits did not become effective until extensive research had been made into community health facilities in ports from Canada to Mexico. The physician-operated Permanente Health Plan is the agency with which the trustees have made their agreement for medical, surgical, and hospital care of stevedores in Portland, San Francisco, and Los Angeles. A Seattle group health cooperative agreed to provide a similar program. In Aberdeen on Gray's Harbor, Wash., the community hospital was found to have a suitable health plan. In a score or so of other small ports, insurance plans were purchased.

To be eligible in the four major ports already named, it is necessary for a man to have worked 600 hours during the first 9 months of 1949. A qualifying total of 360 hours was set for most of the remaining ports.

The longshoremen's local in the San Francisco area worked out a supplemental arrangement with the Permanente Health Plan whereby a member may buy the same health service for his family. Similar contracts are being made by other locals. The plan is also open to small companies who are not members of the shipowners' association if they contribute 3 cents per man-hour worked. The health and welfare plan is regarded by the union and employers alike as another step toward stabilizing labor-management relations on the west coast.

### Employee Health Program Stresses Dental Hygiene

AN extensive dental health and education program is conducted at the E. I. du Pont de Nemours Co. of Wilmington, Del. It is designed to help keep employees dentally and physically fit by keeping them constantly aware of the dangers of tooth decay and mouth infection. Du Pont is well aware of the important role dental health measures have in a good industrial health program.

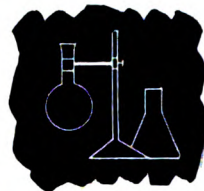
Dr. John H. Frederick, chief dental consultant at the Wilmington plant, periodically distributes to all plant managers and plant physicians of the various du Pont divisions timely arti-

cles on dental medicine and oral health in order to emphasize the importance of dental examinations and to keep them abreast of research findings in the field of dentistry.

### Committee Reports on Standard Methods for Laboratory Procedures

RECOMMENDED methods for the determination of formaldehyde, manganese and oxides of nitrogen in air have been prepared in mimeographed form and distributed to state industrial hygiene units by the committee on standard methods of the American Conference of Governmental Industrial Hygienists.

Laboratory procedures for these substances and several others have been the project of this committee for the past few years. Standard methods have been established through the cooperation of a large number of chemists, with a referee in charge of each group working on a particular substance.



Although the basic methods are available in the literature, development of each detailed procedure has involved considerable effort on the part of the referee and collaborating laboratories. Methods for the determination of formaldehyde, manganese and oxides of nitrogen in air have been approved by the Committee on Standard Methods only after careful and prolonged consideration.

Referees were as follows: Determination of manganese in air, Dr. Robin E. Moser, Industrial Hygiene Section, Oregon State Board of Health; formaldehyde in air (bisulfite method), Hugh L. Parker, Industrial Hygiene Division, Georgia Department of Public Health; and oxides of nitrogen in air, Dr. Hervey B. Elkins, Division of Occupational Hygiene, Massachusetts Department of Labor and Industries, Boston, Mass. Copies of these procedures are available to anyone requesting them. They may be obtained from Dr. Elkins, who is chairman of the committee on standard methods.

## HOW TO MODIFY HALOGENATED HYDROCARBON APPARATUS

By Dr. Robin E. Moser,  
Oregon Board of Health

**A** HALOGENATED hydrocarbon furnace as it is commonly set up and used is a very inconvenient piece of equipment for the following reasons:

It is awkward to transport and set up.

It requires some time to heat up before using and cool off after using.

The drying agent in the tube preceding the orifice flow meter must be changed at frequent intervals.

Furthermore in the plywood plants of this area, glue containing both carbon tetrachloride and carbon disulfide presents a considerable fire hazard, making it inadvisable to take electrically operated equipment into the workrooms.

To meet the objection to electrical equipment in the plants, grab samples are taken. This can be done conveniently by emptying a half-gallon jug of water and capping it immediately. In plants where there is no fire hazard air can be drawn through the jug using a motor-driven pump, if desired.

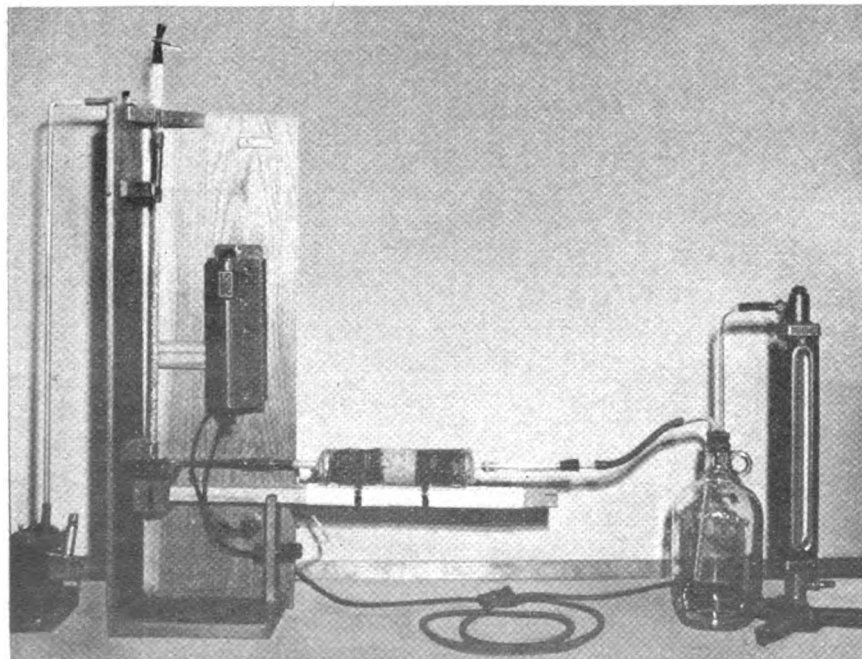
In the laboratory, the jug is fitted

with a two-hole rubber stopper carrying one tube which reaches almost to the bottom; this tube is connected to the inlet of the halogenated hydrocarbon furnace. The other hole of the stopper carries a tube connecting it to a flowrator. (range 1-7 liters of air per minute).

The air sample is then drawn through the furnace at the rate of 1.5 to 2.0 liters per minute for 7 or 8 minutes. This gives about six to eight air changes in the jug and leaves only an insignificant part of the sample in it.

The furnace is otherwise operated as usual, using the absorption solution sodium carbonate and arsenic trioxide recommended by the manufacturers of the apparatus, and the analysis is made in the usual manner by either the Mohr or Volhard procedure, using 0.02 N KCNS and AgNO<sub>3</sub> solutions.

Results of analyses of atmospheres of known concentration in the range of 20-100 p. p. m. of CCl<sub>4</sub> were within 10 percent of the theoretical value.



## Yale Offers Studies in Occupational Health

**Y**ALE UNIVERSITY offers instruction in occupational health in five categories: At the postgraduate level, for physicians, engineers, nurses, and chemists who desire to specialize in occupational health activities in public health departments or in various consulting capacities; for physicians and nurses who are active in industry or commerce or desire to work directly with occupational groups; for students of public health as a phase of the training of students of medicine, engineering, and nursing.

At the undergraduate level, occupational health courses are given as a phase of the training of students of medicine, engineering, and nursing. On a nonacademic basis, studies are made through seminars, institutes and workshops on subjects of special interest for practicing physicians, nurses, engineers, industrial managers, labor leaders and others.

Applicants for the course in occupational health are admitted for study in candidacy for the degree of master of public health, master of science, doctor of public health or doctor of philosophy.

Yale University has been active in the development of teaching and research in the field of occupational health since 1917. The Institute of Occupational Medicine and Hygiene was organized in 1946 as a section of the Department of Public Health. Some of the resources available for cooperative utilization by students are the Yale libraries, the teaching and laboratory facilities of the School of Medicine, the School of Nursing, various units of the Graduate School, and of the Institute of Human Relations; the clinics of the Grace-New Haven Community Hospital; the employee health services of the university and the hospital; and the Bureau of Industrial Hygiene of the Connecticut State Department of Health.

The diversified nature of Connecticut industry makes possible plant observations and field experiences of a varied character. Program development has been carried on in close cooperation with the Connecticut State Medical Society.

# Industries Advised to Make Plans for Protection of Workers' Health During Possible Period of Disaster

**I**N TIME of hostilities, disaster planning for industry is perhaps the one facet of the civilian defense program that bears the closest relationship to the successful prosecution of a war." This was the opening statement made by Dr. J. G. Townsend, Chief, Division of Industrial Hygiene, Public Health Service, in a speech given at the tenth annual congress on industrial health sponsored by the American Medical Association. He said in part:

"It is obvious that during wartime, production must be kept at the highest possible levels. We know, of course, that some serious interruptions are to be expected, but planning before the emergency arises can see to it that such interruptions are kept to a minimum in extent and duration.

"The strategic importance of industry is therefore granted by any reasoning, intelligent person. Strangely enough, however, the need to plan for disaster in industry is not equally apparent to many persons today. Because we have been on the winning side in the last two wars, we in this country are in the fortunate position of having no firsthand experience to draw on to determine how adequate or inadequate our industrial plans for disaster were.

"But we may borrow a page from the experience of two of the losers, Germany and Japan, to understand the importance of dealing adequately with the health problems of industrial workers subjected to unusual strains and protracted periods of emergency.

"According to a United States Government report published in 1947, aerial bombardments had a direct effect on the health of the industrial worker in Germany. They were responsible for irritability, fright and lack of concentration which accounted for a high accident rate, traffic as well as industrial, and functional disorders; production of insubstantial conditions of work which accounted for an increase in upper respiratory infections \* \* \* absenteeism because of ill health was on the increase subsequent to air raids, and measures were instituted to combat it. The measures were very rigorous and successful."

"In Japan, before the atomic bombs, the same report tells us, 'there had been serious deterioration of the health supervision and medical services available. With the lessening of food supplies, long hours of work, and very inferior sanitary facilities and health supervision, absenteeism because of tuberculosis, respiratory infections, malnutrition, skin diseases, dysentery and digestive disorders was greatly increased \* \* \* the overwhelming catastrophe of the bombing undoubtedly aggravated the prevalence and severity of these illnesses by the drastic disruption of medical services, food supplies, shelter and transportation and by the frantic evacuation of many of those not seriously injured \* \* \*'

"In the details of both of these accounts the pattern is clear. Insufficient planning and the break-down of the system of supervisory care of worker health combined to deepen the effects of disaster. Equally clear is the lesson to be learned from these experiences. Any plan developed to deal with disaster in industry should stem from the health program in operation during times of normal production and should be integrated with the community medical service.

"The nucleus of such planning is already in existence in the form of the plant medical departments. Organized to deal with emergency problems related to the job, the industrial medical department requires only additional personnel and supplies to convert it into a major unit in the casualty treatment services. By this adaptability the plant medical department illustrates the basic requirement in any approach to our problem—that is, planning in industry must be closely coordinated with civil defense plans in general.

"To gain some idea of how this coordination can be accomplished, it may prove profitable to note briefly at this point the status of the Government's planning along these lines.

"Federal planning on the health and medical aspects of wartime disaster relief is centered in the Health Resources Division of the National Security Resources Board, which is working closely with specialists from the Public

Health Service and other interested governmental agencies.

"The NSRB has recognized that civil defense programming requires the cooperative efforts of the Federal, State, and local governments and is encouraging the States to adopt legislation that creates State civil defense planning bodies and provides for similar agencies in the counties and cities.

"An important facet of the Government's program is the training of health personnel in the medical phases of new and unconventional methods of warfare. As part of this program, the NSRB has announced a series of seven initial courses for physicians on radiological health problems. Also scheduled are three 5-week instructor training courses in radiological monitoring techniques for qualified educators and technicians selected by the State governments.

"The industrial disaster programs must stem from health programs in operation during times of normal production and they should be integrated with the community disaster relief programs. The basis of the industrial disaster plan is the plant medical and industrial hygiene department. This is organized to deal with emergencies, with health hazards peculiar to the plant, and with large groups of people. By supplementing its personnel and supplies, it can in many cases be easily converted into a major unit in the community emergency health and medical services.

"The plant medical director should survey carefully the facilities available to him in the plant and in the community. In the larger industries it may be possible to establish a casualty station in the plant medical department. In the very large industries, additional casualty stations may be justified and plans made for installing a portable surgical hospital. Where the plant medical department does not provide casualty medical services and cannot be adapted to such activity, necessary arrangements must be made with suitable facilities outside the plant. Then the plant will provide only first aid necessary to permit safe transportation of the seriously injured.

"As a major disaster may make all or part of the facilities in the plant unserviceable, alternative locations, in the plant and outside, should be listed in order of preference. In the event that large numbers of workers would require hospitalization, plans must be made for distributing them among available hospitals to avoid overtaxing any one institution.

"All industries should have first-aid and stretcher squads and one or more first-aid posts. Facilities in the very small industry may warrant only one first-aid post. Each plant should set up first-aid committees composed of specially trained employees to serve when disaster strikes.

"Through periodic and thorough training, these employees will then be prepared to act automatically and efficiently to help stave off the tragic results of unpreparedness and confusion. It has been suggested that at least 20 percent of all employees receive such training. Then, from this group, the best students can be carefully selected for actual duty at the time of disaster.

"The amount of equipment and supplies which should be available is difficult to calculate in general terms. The size of the plant, the character of its operations, and its nearness to existing community facilities will affect these calculations. In addition, the personal experience of one group of physicians, insofar as treatment is concerned, may be different from that of another group. Each plant should therefore prepare its own list of emergency supplies in as great detail as possible. The list should take into consideration the particular health hazards that may exist in the plant and the types of disaster which may occur there.

"Experience has shown that in many disasters there is much confusion and ignorance concerning the sound medical procedure regarding transportation of casualties and location of health personnel. First-aid workers must not let their eagerness to do something immediately for the critically injured result in premature evacuation of the building.

"Emergency treatment necessary for transportation must be done at the scene of disaster. Here it is sufficient to have a doctor or nurse to work with the first-aid teams. Available medical personnel should not be scattered through the affected area, as it is more efficient to

concentrate health personnel and equipment in one or a few locations where the casualties can be brought.

"In planning personnel needs, all too often little attention has been given to the use of a clerical staff. They have jobs of great importance which must be carried out under particularly difficult conditions. As physicians and nurses are occupied in treatment, the clerical staff is responsible for all emergency records and for lists of the injured and their disposition. Such records are essential for keeping track of the people involved in the disaster and for follow-up treatment. A necessary element here is a well-organized system of identification.

"Certain industries must make special plans to prevent hazardous materials in the plant from getting out of control and aggravating the effects of the disaster. The release of toxic gases, liquids, or solids, could cause additional casualties and destruction, and create panic in the affected areas. Local authorities should be informed of these potential hazards, and appropriate protective equipment and procedures should be available outside of the industry. Particular attention should be given to protecting water supplies and to notifying adjacent areas which could be affected by airborne contaminants.

"Successful industrial health programs are dependent to a large extent on the health knowledge, attitudes, and habits of the workers. Worker education should deal with the general health of the worker, as well as with occupational health problems. Educational programs in this field must be improved and expanded. For this purpose, the opportunities provided by labor unions for reaching large numbers of workers should be fully explored.

"Complete and effective use of manpower, desirable during peacetime, is essential in time of national emergency. The large number of handicapped persons who are potential workers must be rehabilitated, and trained for the work in which they can be most productive. Current programs in the field must be enlarged to take care of this group if they are to be available for all future manpower needs."



## "PREFACE TO A LIFE"

### New Mental Health Film

**R**ELLEASE of a new motion picture entitled "Preface to a Life," has been announced by the National Institute of Mental Health of the Public Health Service and the Office of Education, Federal Security Agency.

Designed for parents, teachers, and all others who are interested in children, the film demonstrates the vital importance of early childhood experience in building good mental health in adult life.

"Preface to a Life" emphasizes the influence parents have on a child's developing personality. This is illustrated by a series of episodes in the life of a boy from his birth until he becomes an adult. Using typical situations that might occur in any family raising youngsters, the film shows the effect of three different parental attitudes toward the child. When his parents help him to develop according to his own capabilities—not expecting too much of him and not keeping him too dependent on others, the boy grows up into a man capable of living a satisfying, productive life. On the other hand, when each parent tries to force him to become the kind of man each wishes him to be, he is unable to meet their demands and grows up a restless, dissatisfied person.

"Preface to a Life" was produced by Sun Dial Films, Inc., under the supervision of Samuel A. Datlowe, and with the professional advice of Dr. M. Ralph Kaufman, chief psychiatrist of Mount Sinai Hospital who served as psychiatric consultant in the production of "The Snake Pit." The photography was done by Boris Kaufman, and the script was written and directed by William S. Resnick. Karol Rathaus composed the musical score, and Nelson Case is the narrator.

The National Institute of Mental Health has made 16-mm. prints of "Preface to a Life" available to each State Mental Health authority for showings. Prints can be purchased from Castle Films, 1445 Park Avenue, New York 29, N. Y. It is a black and white sound film with a running time of 28 minutes.

# AIR POLLUTION—

(Continued from page 6)

for consideration. That is what I meant when I said that your interest can determine, in large part, the type of legislation that is enacted.

The Public Health Service, too, has had to exercise some vigilance in the case of bills introduced before the Congress. Five measures have been proposed, one of which reflects a limited view of the over-all problem of air pollution. This bill would authorize and direct the Civil Aeronautics Board to study the need for smog control in the vicinity of airports in order to promote safety in air navigation. Responsibility would also be vested in the Board to determine the most practicable means by which the discharge of smoke contributing to the formation of smog could be controlled.

I believe that our objections to this bill are obvious. First of all, from the standpoint of health, the most dangerous smogs are not necessarily those which hamper visibility. Second, in some towns where the smog problem exists, there is no airport. Furthermore, we are not convinced that Federal control of the smog problem is the solution. Air pollution is not necessarily even a State problem. It is primarily a local matter, since each locality has its own peculiar topography, industry, and meteorological conditions. We believe that the Federal Government should have authority to step into a local situation only when more than one political area is involved—as, for example, the Staten Island problem, involving the States of New York and New Jersey.

The best approach to the problem at present, we believe, is for the Federal Government to conduct research and furnish data for recommendations which can be used by the States and cities in preparing specific control legislation.

### Research Projects in PHS

Our proposed research projects imply the major objectives of a comprehensive air pollution control program. First, we must identify the various pollution sources, their properties, and demands, there is need to develop more effective methods of sam-

pling and analysis. Third, we must determine chronic effects of exposure to air pollution so that threshold values of contaminants, similar to the maximum allowable concentrations used in industry, may be developed. Finally, we must do research on control measures to arrive at methods that are more practical and economical than those in current use.

All these activities you will recognize as research and guidance projects, except for studies in areas where individual States do not have jurisdiction, or where several areas are involved and the Federal Government, obviously, has to step into the picture. I do not believe there is any argument over the assertion that I made a moment ago that the actual air pollution control job is the responsibility of each State and local area.

### Responsibility of Industrial Hygienists

I should like to think that we are all agreed that it is the job of the industrial hygienist in these areas, but it appears that there is no unanimity of opinion on that score. The stand subscribed to by some industrial hygienists—that the problem of air pollution is not their concern—is unfortunate regardless of the premise on which it is based.

I believe that closer examination of the premise would also show it to be fallacious. For example, one common objection to the job of air pollution control is that it smacks of politics. However, I firmly believe that, if the industrial hygienist were to approach this problem with the same scientific objectivity—and subject it to the same careful, discerning study that he does other industrial hygiene matters—there need be no political overtones.

The control of the outer atmosphere is but a short, quick step removed from the control of the inner working environment, in which the industrial hygienist is the recognized specialist. If he refuses now to apply the skills which he has acquired over a long period of years, he will be violating an ethical responsibility.

This same reluctance to tackle a new activity was also evident when the problem of ionizing radiations came into prominence. For a while it looked as though the health physicists were going

to monopolize this field, and we are not certain even today who is going to predominate. Hesitation in assuming responsibilities can be costly! Let us remember that, no matter how much territory we have to cover, whenever a problem comes along that requires our skills, it is our public trust to assume that obligation.

As a case in point, for a long period of time the Division of Industrial Hygiene did extensive work in school illumination, even though that wasn't related to industrial hygiene. We took on that work because we were the only ones who had the required skills.

As another example, our dermatologists serve in a consultative capacity on public health matters that lie outside the scope of industrial hygiene. The underlying principle is the same: If we have skills, we would be remiss not to do the job. This same ethical responsibility applies to the problem of air pollution.

The need for the industrial hygienist to enter that field is intensified by an additional factor. If we don't undertake this task, the responsibility may be vested by default in other groups that may not be so well qualified to assume it. If any of these groups, by drawing on industrial hygiene personnel or utilizing industrial hygiene techniques and knowledge, should succeed in doing a creditable job of air pollution control, there might well be a danger that that agency will attempt to take over the entire industrial hygiene program.

I think it would be most unfortunate if another agency were to reap the fruits of your efforts by taking over, lock, stock, and barrel, a program which represents the culmination of years of intensive, pioneering effort. You must entertain that as a distinct possibility if the industrial hygienist does not enter the air pollution field.

### State Responsibilities

Drawing on the experience of those industrial hygienists who have already entered this field, I believe that you at the State level can best approach the problem through the establishment of a strong central air pollution unit within the State industrial hygiene department.

The State of Pennsylvania, for ex-

ample, has established a Division of Air Pollution Control within the Bureau of Industrial Hygiene. It will be the responsibility of that division to study atmospheric pollution in relation to its effect on the public health and to make recommendations for controlling the emission of contaminants into the atmosphere of industrial communities. A fully equipped mobile laboratory is available for this important program.

The advantage of such centralized control is that a minimum of highly trained personnel and funds are required. Needs of the larger cities can be met by having air pollution control inspectors, similar to the local smoke inspectors now in existence, who would report their findings back to State headquarters. Local communities can then be assisted in the proper evaluation of their individual problems by the State staff.

Even in the absence of a strong air pollution unit, State and local industrial hygienists can work closely with smoke abatement departments. Since the control of air pollution includes smoke abatement, as well as the control of industrial emissions, most major cities today have smoke abatement departments whose main function is to eliminate air contaminants from combustion. Industrial hygienists can cooperate with smoke abatement engineers to reduce the contaminants coming from industrial establishments.

Again, even in the absence of a strong unit, industrial hygienists can be instrumental in guiding a municipality to a solution of its problem. Acting in an advisory capacity, they can recommend that a municipality appropriate funds to have a research organization do the evaluation. For instance, Louisville, Ky., has appropriated \$10,000 to the University of Louisville for an air pollution evaluation in one section of the city.

Various approaches may be dictated by individual circumstances, but the important thing is that the industrial hygienist must respond to the public need and demand for a cleaner atmosphere. He should assist not only by lending his professional skills but also by guiding the development of proposed legislation toward securing an effective, workable, unemotional program for the reduction of pollution.

## FLORIDA CITIZENS WARNED OF DANGER FROM PARATHION

**F**LORIDA pharmacists and physicians were the special targets of an information campaign this spring for the control of parathion poisoning. Through newspaper articles, magazine editorials, fliers and blotters, the Florida State Board of Health warned the citizens of the dangers of parathion. Hospitals were given warning signs to hang in their emergency rooms.

Three divisions of the Florida Board of Health cooperated on this campaign, namely, Industrial Hygiene, Entomology, and Public Health Information.

Knowing that many people go to pharmacists for advice, the Board directed much of its effort toward that group. Information on symptoms and treatment was made available and they were urged to tell persons who may have been poisoned by parathion to see a physician without delay.

One death from parathion poisoning had already occurred in Florida prior to the campaign. The victim was preparing a spray mixture and absorbed sufficient parathion to cause death in 12 hours, in spite of the prompt application of accepted treatment in a well-equipped hospital. One other cause of severe poisoning also occurred in Florida; the man recovered after the administration of oxygen and the use of an iron lung.

## RECOMMENDED READING

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Steel, M. and Feltham, D. V. G.: Arsenic poisoning in industry. Report of

a case. *Lancet* 1: 108-110 (January 21) 1950.

U. S. Department of Labor, Bureau of Labor Standards: Workmen's Compensation Problems, 1949. *Proceedings of 35th Annual Convention of IAABC*, St. Louis, October 3-6, 1949. Bulletin No. 119. Government Printing Office, Washington 25, D. C., 1950. 187 pp. Price 40 cents.

## Simplex Clinic Gives In-Plant Training To Graduate Nurses

**F**ORTY-ONE graduate nurses have been given in-plant training in the medical clinic of the Simplex Wire & Cable Co., Cambridge, Mass. Since 1945, the Simplex clinic has been cooperating with several schools of nursing in Greater Boston in their expanded educational programs for field work and in-plant training.

"From June 1945 to February 1949," said Head Nurse Catherine R. Dempsey, R. N., "24 students from Simmons College School of Nursing have spent a month each with us studying the basic health program of industry and working along with our nursing staff. These were all graduates of schools of nursing who had come to Simmons from many States for postgraduate study. Since September 1948, the Boston College School of Nursing has had a part-time program in industrial nursing and is completing plans for a full-time program in this specialized field.

"Five students from the Boston College School of Nursing have been with us for 4-week periods in 1949. They have been studying all phases of our health program. They have attended meetings of the plant's general committee on safety and health; and they have participated in the labor-management inspections that were required in the campaign for good housekeeping in the factory.

"Records at the clinic tell of visits from many students and interested individuals. Fourteen seniors have come over from the School of Nursing at the Cambridge City Hospital, two from the Peter Bent Brigham School of Nursing, and two from the McLean Hospital." (By courtesy of *Simplex Pennant*, December 16, 1949.)